

4 Worksheet on Statistics: Tables, Graphs, Charts

Text: Jacob August Riis, "The Crazy Quilt," from: Peter Freese, *New York, Viewfinder Topics* (München: Langenscheidt, 2011), pp. 20-23.

A HOW TO DEAL WITH STATISTICS

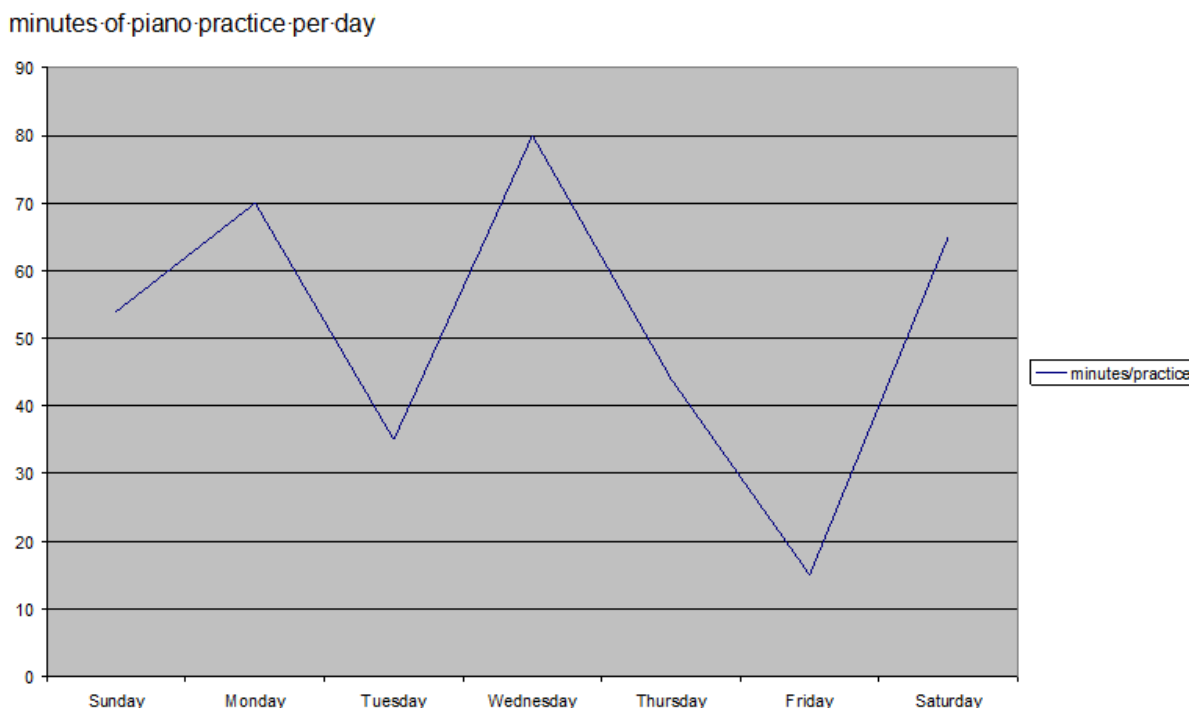
"Statistics" has two meanings. It can be a set of numbers which represent facts or measurements, but it is also a term for the science of collecting and examining such numbers (as a branch of mathematics).

Scientific studies often produce an overwhelming amount of data, expressed in numbers. In order to display them, they are arranged in tables, graphs or charts, ideally in such a way that even the non-expert reader can make sense of them.

The most basic form of arranging data is a **table**. The following example shows how many minutes per day a music student called Wolfgang practiced the piano in a certain week.

day	minutes/practice
Sunday	54
Monday	70
Tuesday	35
Wednesday	80
Thursday	44
Friday	15
Saturday	65

The simplest graphical arrangement of a straightforward set of corresponding data that show a development during a certain period of time (like for Wolfgang’s piano practice above) is a **line graph**. The following example uses the data in the table above.

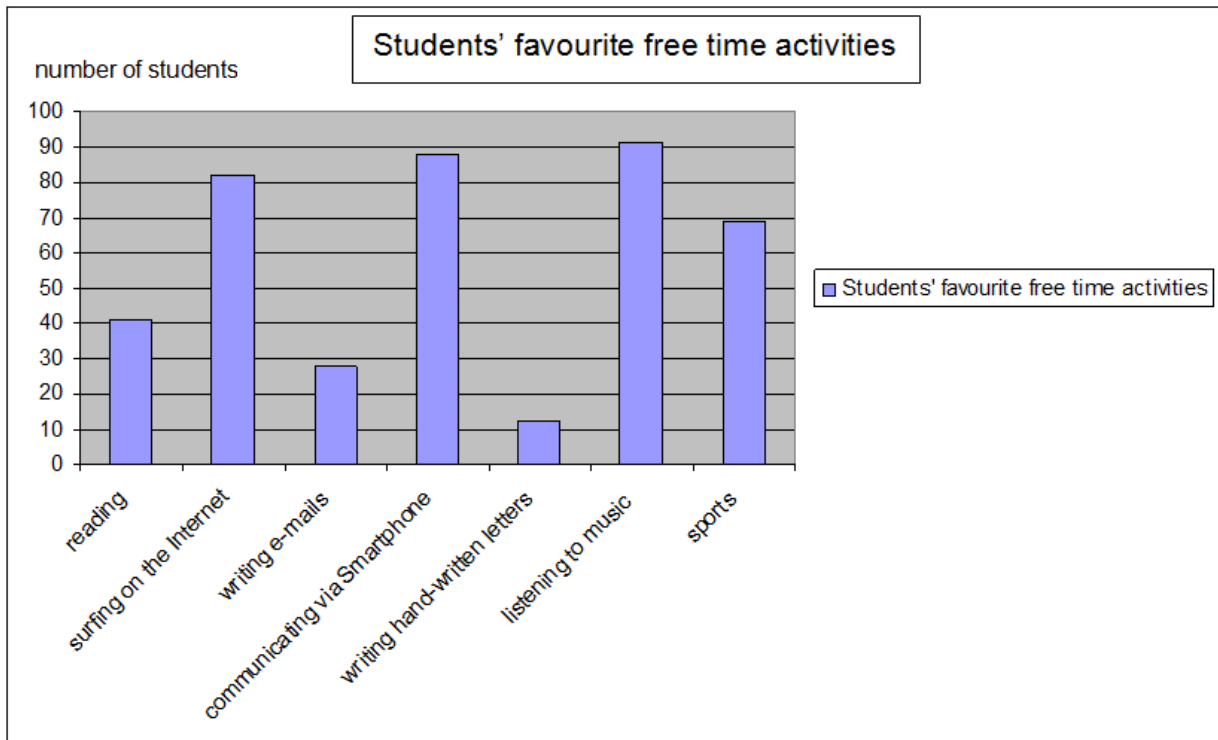


If the data in a table are not changing over time, but each quantity listed in the table corresponds to a particular category, a **bar graph** is a useful way to display them, either vertically or horizontally.

Example:

Students’ favourite free time activities (100 students)	
reading	41
surfing on the Internet	82
writing e-mails	28
communicating via Smartphone	88
writing hand-written letters	12
listening to music	91
sports	69

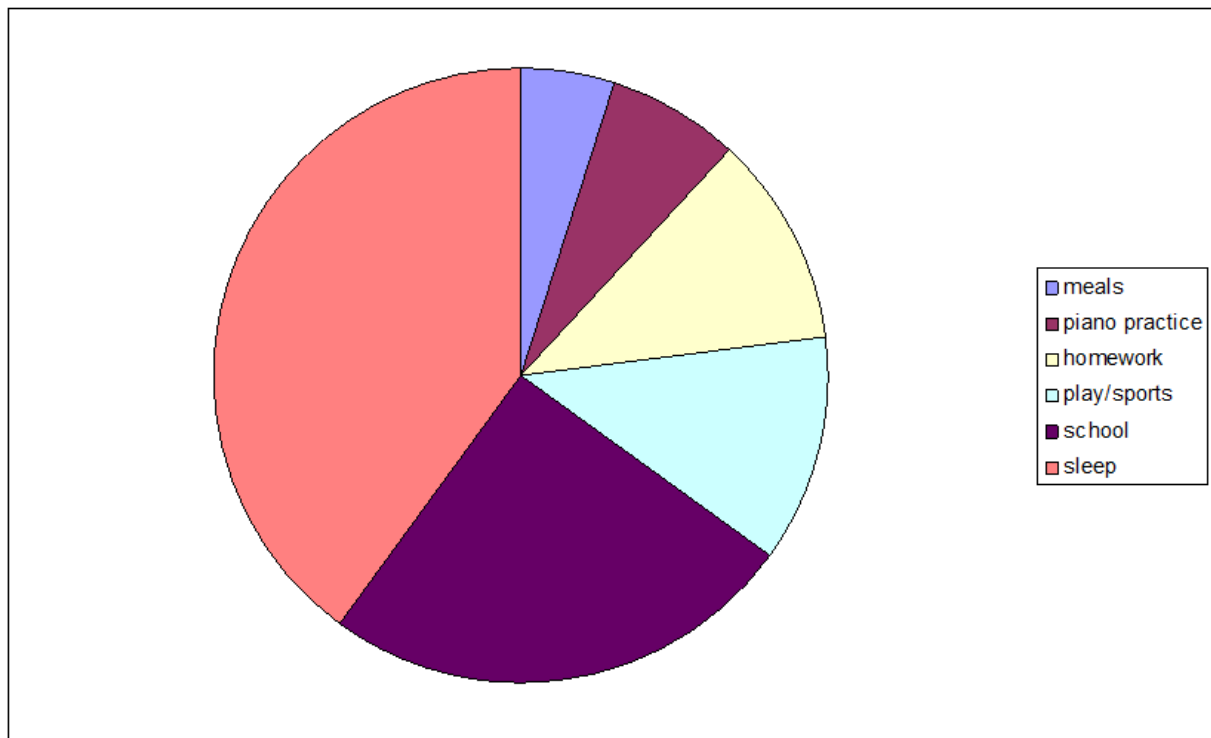
In the vertical bar graph below, each quantity is represented by a vertical bar.



A **circle graph** (also called **pie graph**, or **pie chart**) is used to show how the whole of something is divided into parts. The whole circle or pie graph stands for the entire sample. The pieces of the pie in the circle graph are called “sectors”.

In the example on the following page, the whole pie graph represents a day in Wolfgang’s life, and the sectors show with what activities he spends a typical day; in the table, the numbers stand for how many per cent the activity takes up within the 24 hours of a day.

activity	% / day
meals	5
piano practice	7
homework	11
play/sports	12
school	25
sleep	40



The fundamental rule to observe for interpreting tables, graphs and charts is to concentrate on the legend, i.e. the labels telling you what stands for what. Only if you know what the numbers in a column or the sectors in a pie graph stand for, and what measuring unit is used (centimetres, metres, or kilometres?), can you make sense of the information.

B TASKS

- Look at the table “Recent Census Figures for New York City” (p. 23). How big is the difference in the figures for white people between the Census 2000 and the Estimates 2007? What does this mean converted into numbers of people, considering the total population was estimated at 8,308,163?
 - Where is the biggest difference to be found between 2000 and 2007 (please ignore the last line, “persons reporting two or more races”)? How many people does this refer to? - Can you find a German city of about that size?

2. In the bottom half of the box with census figures, you can see that 47.6 % of New York City inhabitants older than four years do not speak English at home, but a different language.
 - a) Why is this an important figure?
 - b) Why did they ask for “persons at age 5+” instead of 4+ or 10+, what do you think?

3. How many per cent of firms are owned by white people? - Comment.

(Peter Ringeisen)